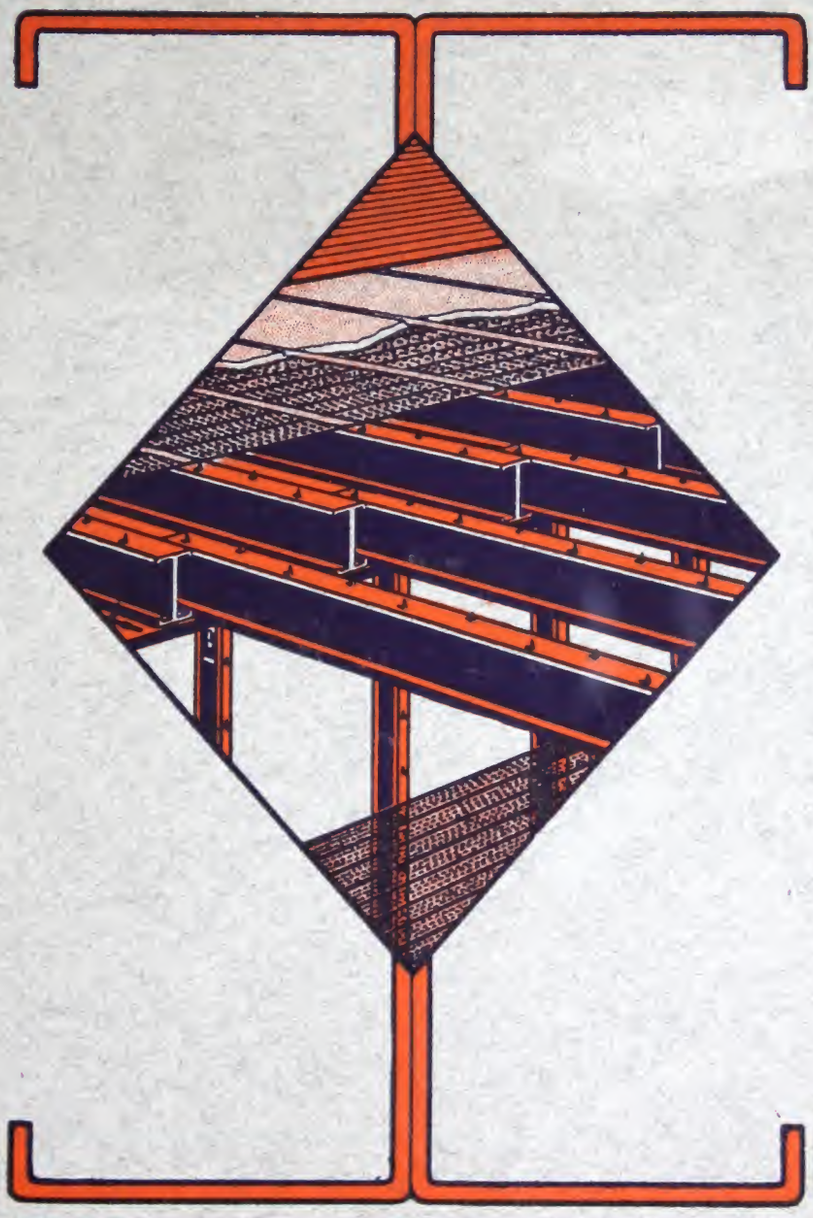
KAHN PRESSED STEEL CONSTRUCTION



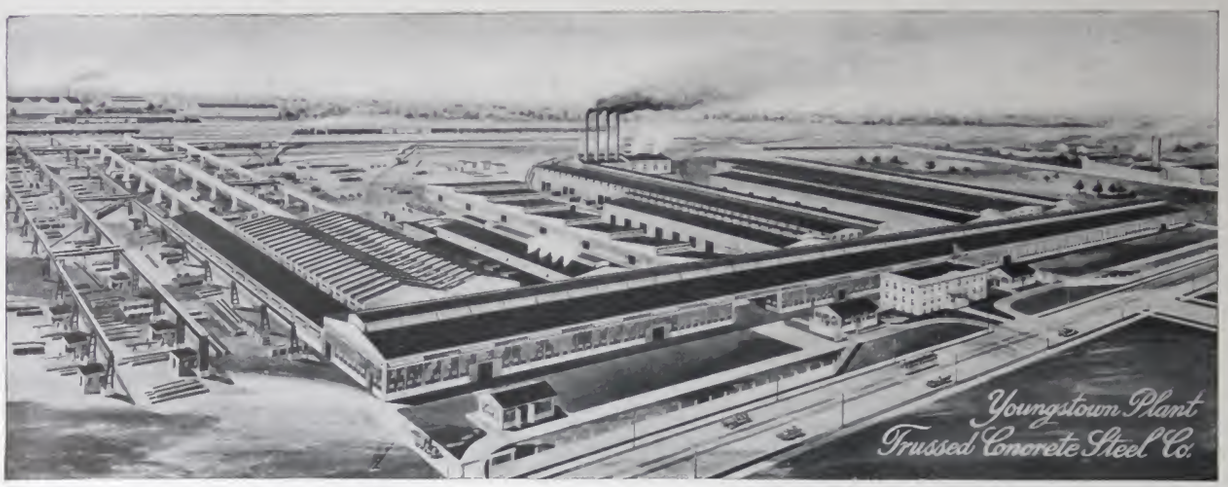
TRUSSED CONCRETE STEEL CO.

YOUNGSTOWN - OHIO

KAHN PRESSED STEEL
JOISTS AND STUDS
WITH HY-RIB

FOR FLOORS, ROOFS, WALLS
AND PARTITIONS

TRUSSED CONCRETE STEEL CO.
YOUNGSTOWN, OHIO
Representatives in Principal Cities



The immense plant of the Trussed Concrete Steel Company, Youngstown, Ohio, where Kahn Pressed Steel Products are manufactured.

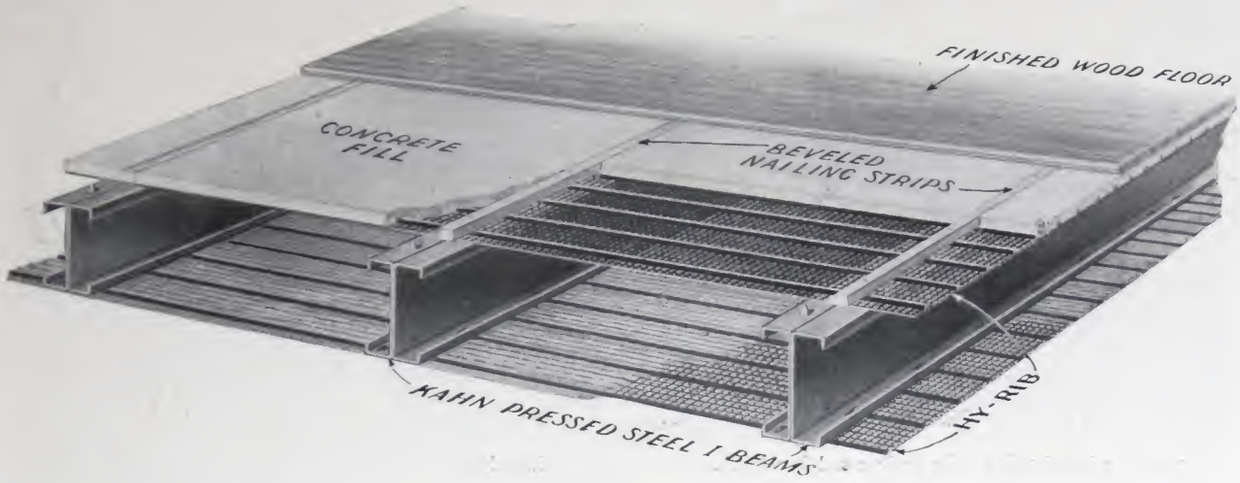
The Product and the Service

Actual use in many important structures has proven the practicability, economy and efficiency of Kahn Pressed Steel Construction. The scientific design and superior construction of these joists and studs are the result of wide building experience, exhaustive experimental work and unequalled manufacturing facilities.

Our immense plant is devoted exclusively to the manufacturing of steel products for use in building, and is complete in equipment, stock and shipping facilities. Our able organization of skilled specialists is ready at all times to co-operate with architects, owners and contractors.

Successfully used for years in thousands of important structures throughout the world, Kahn Building Products have an established reputation for high quality and reliability. Among the products of the Trussed Concrete Steel Company are included the Kahn System of Reinforcement, Hy-Rib, Metal Lath, United Steel Sash, Highway Products, Kahn Steel Buildings and many building specialties.

Kahn Pressed Steel will solve many problems where heretofore only wood construction could be used. Light, strong, permanent, fire-resisting floors, walls and partitions can now be easily erected at a very economical cost.



A Fireproof Floor — Light in Weight and Low in Cost

Kahn Pressed Steel Beams with Hy-Rib and Concrete

For floors of all buildings,—stores, apartment houses, schools, residences, etc., here is a fire resisting construction which is more simple to erect than wood and costs very little more. It is no longer necessary to use inflammable wood joists and wood lath in even the smallest of buildings. The use of Kahn Pressed Steel Beams with Hy-Rib and concrete provides the permanance and fire-proofness of reinforced concrete and steel, without requiring special equipment for installation.

No forms nor centering are required. Only a comparatively small amount of materials need to be handled, saving time and labor in erection. The light weight of this construction saves greatly not only in the floor itself but in the supporting beams, columns and foundations.

Kahn Pressed Steel Beams are made in a large variety of sizes and shapes so as to meet the exact requirements of span and loading. They are furnished cut to exact length and properly manufactured so that no further work is required on them at the building site. These Pressed Steel Beams are set in place and $\frac{3}{8}''$ Hy-Rib Lath placed on the top and bottom sides. For wood finished floors, beveled wooden strips are fastened to the beams by nails driven between the channel sections. The concrete fill is then applied to the Hy-Rib and the finished wood floor nailed to the strips. Any other type of finish can of course be applied to the floor. The Hy-Rib for the ceiling is readily attached to the under side of the beams by merely bending over the prongs provided in the beams.

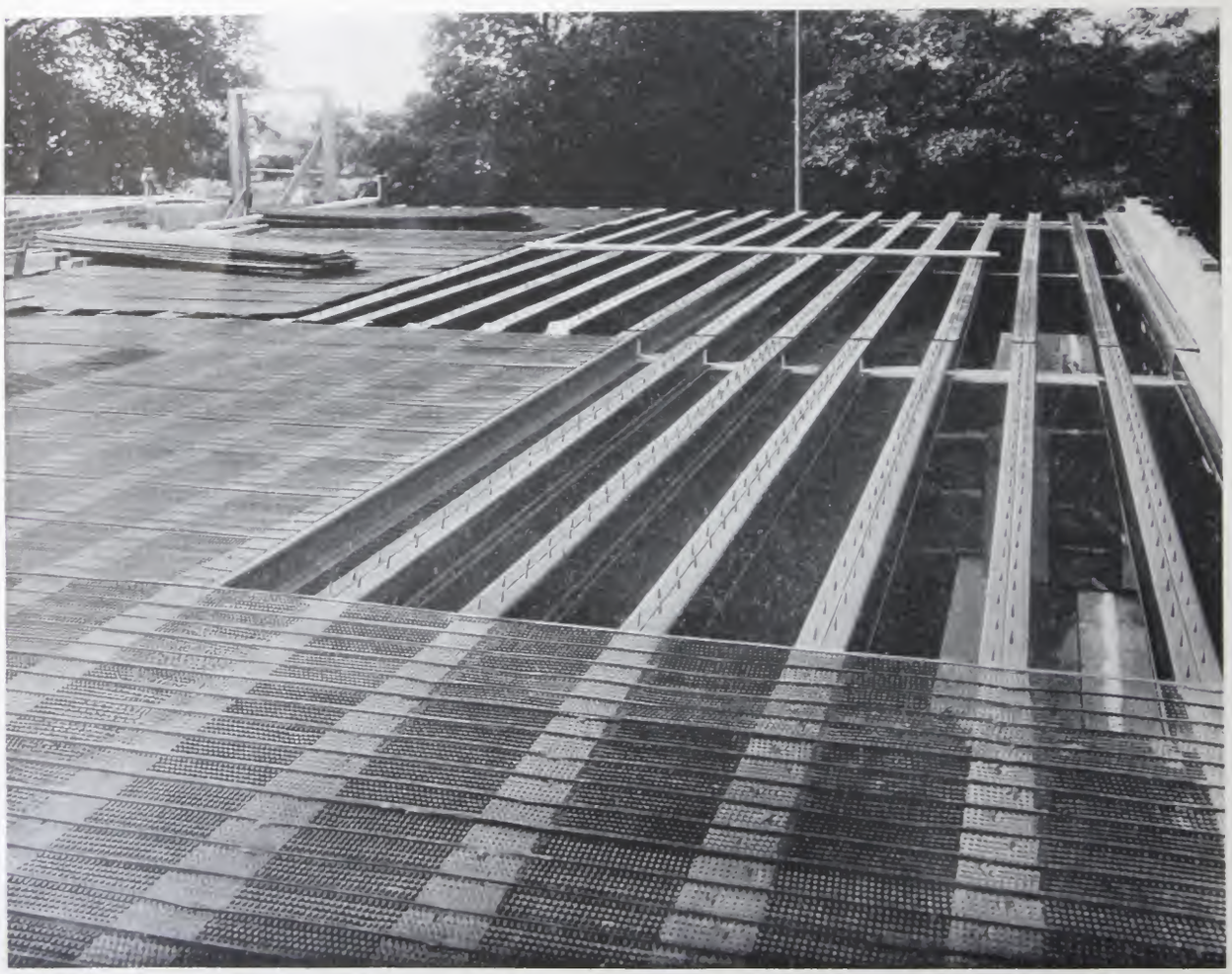
The Kahn Pressed Steel Beams may be supported directly by walls, or by beams of structural steel or reinforced concrete. The use of reinforced concrete beams provides very economical construction as explained in detail on page 7 of this folder.

ELIMINATE WOOD JOISTS BY USE OF KAHN PRESSED STEEL BEAMS

The economy and advantages due to fireproofness and permanence are worth many times the slight additional first cost. The construction is vermin-proof—no rats, mice, roaches, nor vermin of any kind to depreciate the value of your property. The ceiling is of metal lath and plaster—no wood lath nor joists to shrink or swell and cause cracked, streaky ceilings and ruined decorations. Kahn Pressed Steel construction is simpler and easier to erect than wood and takes less time. Write for our detailed suggestions for your particular work.

Concreting Roof of Hy-Rib on Pressed Steel Joists.

Placing Concrete Fill Between Floor Screeds on Pressed Steel Construction

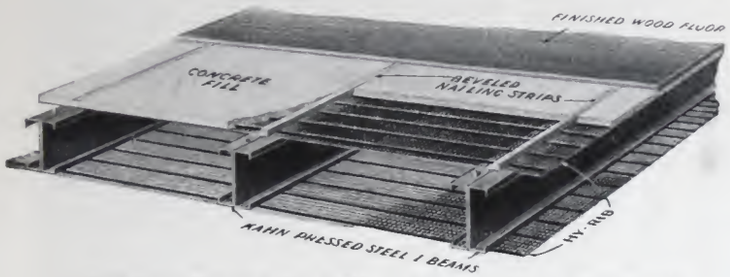


Kahn Pressed Steel Joists Supported by Masonry Walls. Portion of Hy-Rib for Floor is in Place.
View Shows Extreme Simplicity of Construction
Edinburg Township School, Ohio, Kling & Zenk, Architects

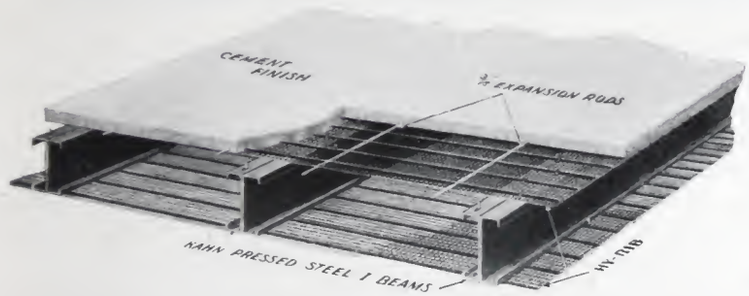
Fire-Resisting Floors of Kahn Pressed Steel Construction

The floors consist of Pressed Steel I-Beams of proper size and section to carry the required load. $\frac{3}{8}$" Hy-Rib Lath is laid on top of these I-Beams, with the ribs extending across them and is secured to the beams by the prongs in the top flange or by the nailing of the sleepers to the joist. This Hy-Rib not only serves as forms and reinforcing for the concrete but so greatly stiffens the construction as to eliminate all necessity for bridging, the ribs acting as a strut between the beams. Hy-Rib for ceilings is attached to the I-Beams by means of the prongs punched from the lower flange.

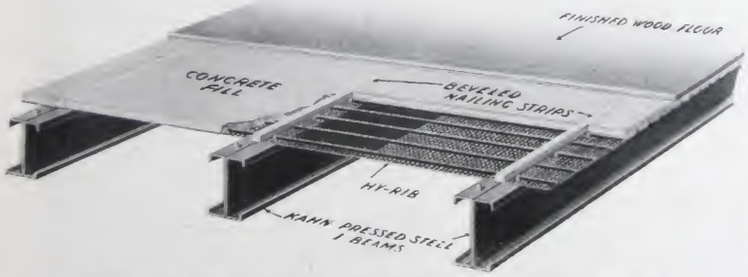
$\frac{3}{8}$" Hy-Rib Lath of proper gauge is used with the pressed steel beams for floors and ceiling.



Standard Pressed Steel Floor Construction with Wood Floor Finish and Plastered Ceiling



Standard Pressed Steel Floor Construction with Cement Finish and Plastered Ceiling



Standard Pressed Steel Floor Construction with Wood Floor Finish and Without Ceiling

The Kahn Pressed Steel I-Beams are manufactured in such a large variety of shapes and sizes as to meet all requirements of span and loading. Note particularly that the I-Beam sections are absolutely symmetrical both vertically and horizontally. There is no possibility of a contractor placing them with wrong sections on the lower side such as may happen where the sections are unsymmetrical. The turned flanges on both the upper and lower flanges of the beam greatly stiffen and strengthen the I-Beam.

The tables given for carrying capacities are based on the actual net sections of the steel after having deducted the area for punching out of the prongs. Standard rivets are used for riveting together the channel sections that form the I-Beams.

Where a wood floor is desired, beveled nailing strips are used over the top of the I-Beams and are fastened to them by nails driven between the channel sections. Between the nailing strips a concrete fill is applied. The nailing strips are ordinarily $1\frac{1}{2}$" deep. The finished wood floor is attracted directly to these nailing strips.

For a floor with cement finish, expansion rods are placed over the Hy-Rib and concrete is applied as shown in illustration. Owing to its stiffness, there is no appreciable sagging of the Hy-Rib thus saving greatly in amount of concrete required. Where it is not necessary to have a plastered ceiling, as in basements, the Hy-Rib may be omitted from the lower flange as shown in illustration.

SOUNDPROOFNESS OF PRESSED STEEL CONSTRUCTION

The hollow air spaces of Kahn Pressed Steel Construction as used in floors or partitions serve as an excellent insulator against the passage of sound through them. This soundproofness is an additional advantage in the use of this construction for apartment houses, hotels, office buildings, schools, etc. The Niagara Hotel at Toledo, Ohio, shown on pages 18-19, is an interesting example of the use of Kahn Pressed Steel partitions and floors and the Architect, Thomas E. Huber has particularly commended the soundproofness of the construction. (See letter page 19.)

ROGOWSKI BROS. & WEDDA

Mason Contractors and Builders

Trussed Concrete Steel Co., Detroit, Mich., December 31st, 1915

We are highly pleased with the Kahn pressed steel costruction on the Arctic Ice Cream Co. Building.

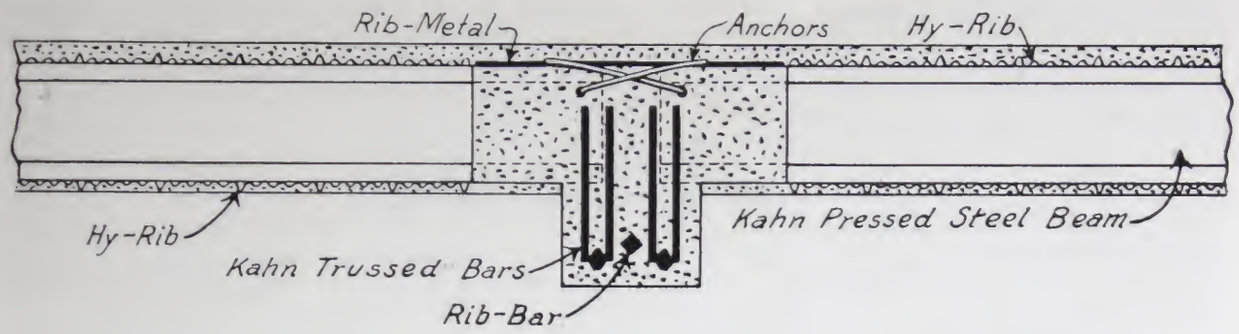
The construction of the units as well as the method of assembling them is simple; the materials are light; the drawings are clear and plain, and the parts are comparatively few. All of which tends to, and does, reduce the cost of construction, which point, as we all know, is of paramount importance.

Respectfully,

JW/CS ROGOWSKI BROS. & WEDDA, By Joseph Wedda.

Framing of Kahn Pressed Steel Joists into Concrete Beams, showing Reinforcement and Centering of Beams and Anchorage of Joists.—Arctic Ice Cream Company, Detroit, Mich.

Designed by Owners. Rogowski Bros. and Wedda, Contractors.

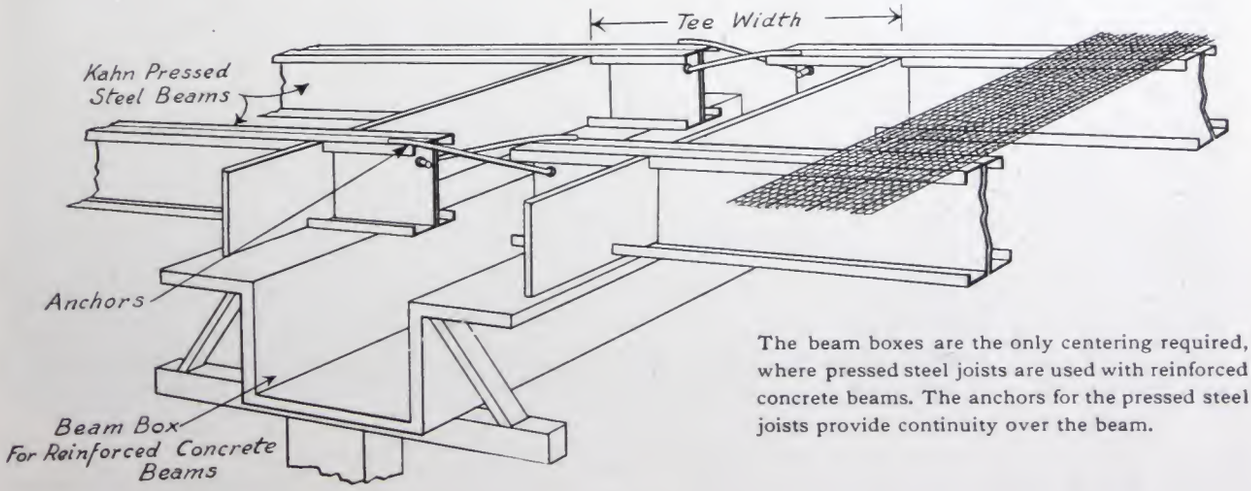


Kahn Pressed Steel Joists with Reinforced Concrete Beams

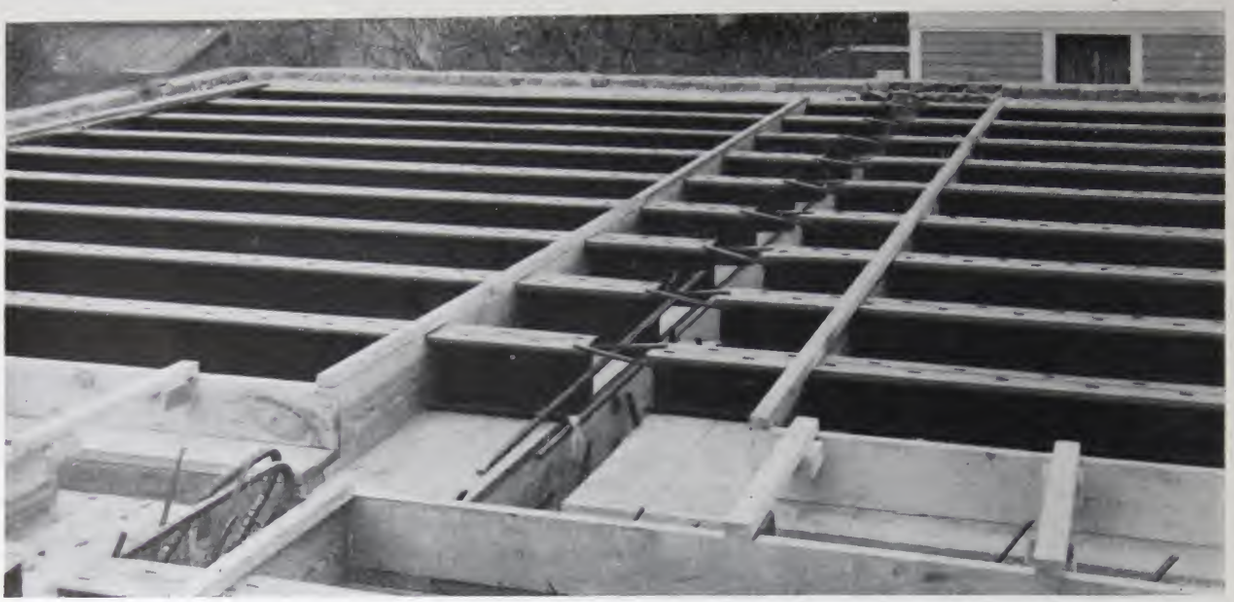
The use of reinforced concrete beams and columns to support Pressed Steel floors provides a most economical construction. No forms whatever are required for the floors, the only centering being for the columns and beams as indicated in the illustration below. A reinforced concrete beam costs considerably less than a structural steel beam which is fireproofed by concrete, tile, or lath and cement plaster. The elimination of centering and the reduced amount of material to handle greatly increase speed of construction.

The Pressed Steel Beams extend at least 3″ into the reinforced concrete beam and are anchored in place as indicated in illustrations. Note in this construction the "T" shaped section of the reinforced concrete beam and the continuity reinforcement of Rib Metal over the top of the beam. The Hy-Rib for the floors extends only to the side of the "T" so that the concrete for the beams and the 1½″ floor is poured at one operation. The Hy-Rib can then be attached to the under side of the Pressed Steel Beams and the ceiling plastered. ⅜″ Hy-Rib Lath is used for the floor and ceiling. The light weight of the Pressed Steel Floor Construction saves materially in the supporting beams, columns and foundations. Tables on page 13 give carrying capacities of various sizes of Pressed Steel Beams.

A number of actual installations of Pressed Steel Joists in connection with Reinforced Concrete Beams testify its excellence from all standpoints. Architects, owners and contractors have expressed their satisfaction with the simplicity and the economy of the construction. See particularly the photographs and letters appearing on pages 6-8-9. Actual bids on this construction have been almost as low as wood joists with steel beams. A fire resisting construction is thus provided at a cost which is very little more than short lived inflammable materials.



The beam boxes are the only centering required, where pressed steel joists are used with reinforced concrete beams. The anchors for the pressed steel joists provide continuity over the beam.



BRAAS BROS. CO.
GENERAL CONTRACTORS

Trussed Concrete Steel Co. Niagara Falls, N.Y., Jan. 7th, 1916

Gentlemen:— Re-Jenss Bros. Store.

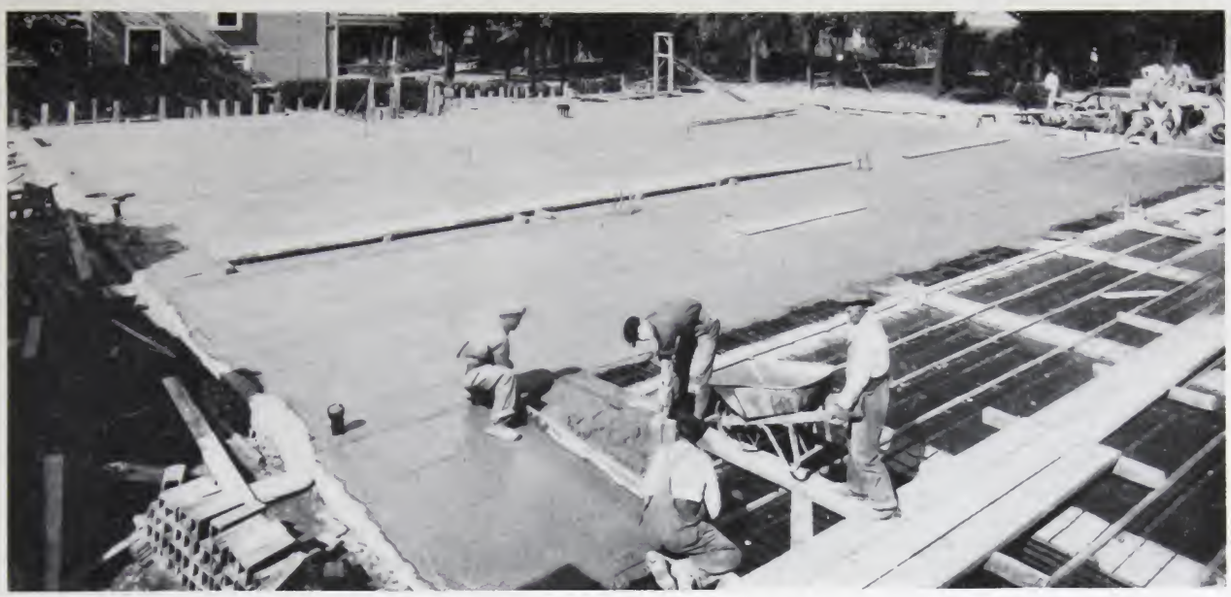
In regard to the above building which is being constructed of your products—namely reinforcing material, Pressed Steel Joists and Hy-Rib, we wish to inform you that we are heartily pleased with this method of construction.

We were able through this construction to give the owners a most attractive figure and one very close to the steel and wood construction first planned for by the architect.

We recommend it highly. Yours very truly, BRAAS BROTHERS COMPANY, C. F. Braas, Pres.

Framing of Kahn Pressed Steel Joists with Reinforced Concrete Beams—Upper view before concreting floor
—Lower view before applying Hy-Rib Ceiling
Jenss Bros. Department Store, Niagara Falls, N. Y.

Simon Larke, Architect Braas Bros. Co., Contractors



SIMON LARKE
Architect

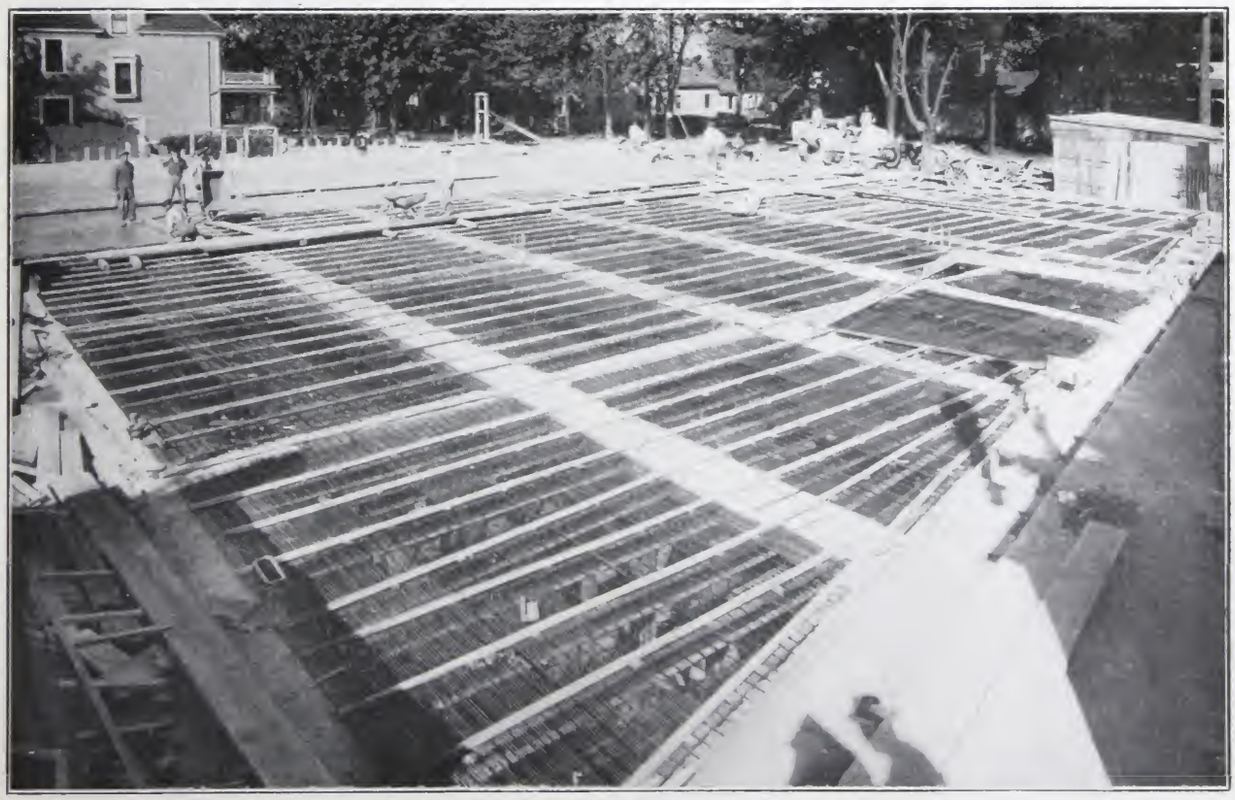
Trussed Concrete Steel Co ,
Youngstown, Ohio.

Niagara Falls, N.Y., Jan. 4th, 1916

Gentlemen:—

I wish to state my appreciation of your services and material in connection with the reinforced concrete work and metal joists for the Jenss building in this city. I am sure that I but voice the sentiment of the Jenss Brothers when I say that we cannot state too strongly the gratification we feel in having made the change from steel and joist construction to reinforced concrete and pressed steel.

Very truly yours,
Simon Larke.

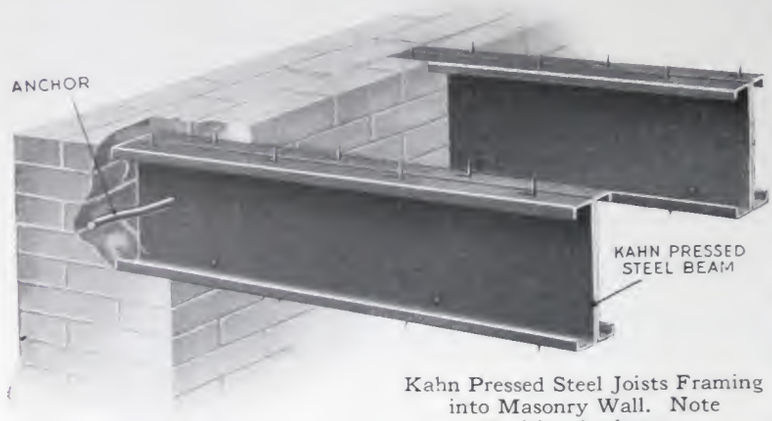


Concreting Floor and Wood Screeds in Place Over Hy-Rib and Kahn Pressed Steel Joists
Jenss Bros. Department Store, Niagara Falls, N. Y.

Simon Larke, Architect — Brass Bros. Co., Contractors

Kahn Pressed Steel Joists Supported by Masonry Walls

Kahn Pressed Steel Joists are widely used to eliminate wood joists in buildings having bearing walls of brick, stone, concrete blocks or other masonry construction. The Pressed Steel Joists frame into the masonry in exactly the same way as wood joists and are anchored to the walls in the manner shown in accompanying illustration.



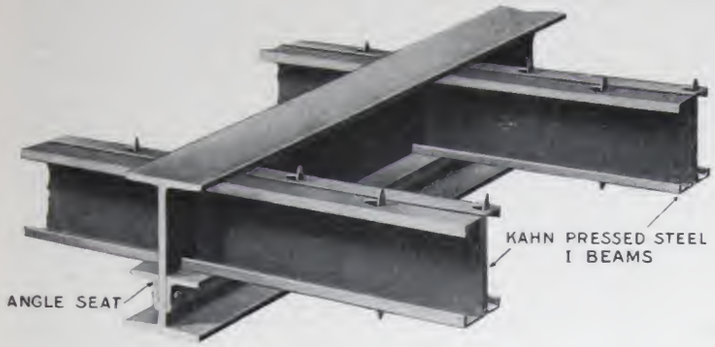
Kahn Pressed Steel Joists Framing into Masonry Wall. Note Positive Anchorage

Both the exterior and interior wall may be of masonry as in many small stores, and apartment houses. A very popular construction is to have the outside wall of masonry while the interior walls are of Kahn Pressed Steel Studs of sufficient strength to support the Kahn Pressed Steel Joists. In this way the same general arrangement of joists and studs as used in residences, and apartment houses is followed except that the construction is much simpler than with wood. The Kahn Pressed Steel Joists and Studs are furnished cut to length and punched ready for installation in the building, and are quickly erected and united by our improved standard connection. There is no cutting, punching, nailing, riveting or bolting; the only tool required is a hammer. The use of Hy-Rib entirely eliminates all wood lath, insuring an interior that is fireproof, verminproof and free of cracked walls and ceilings.

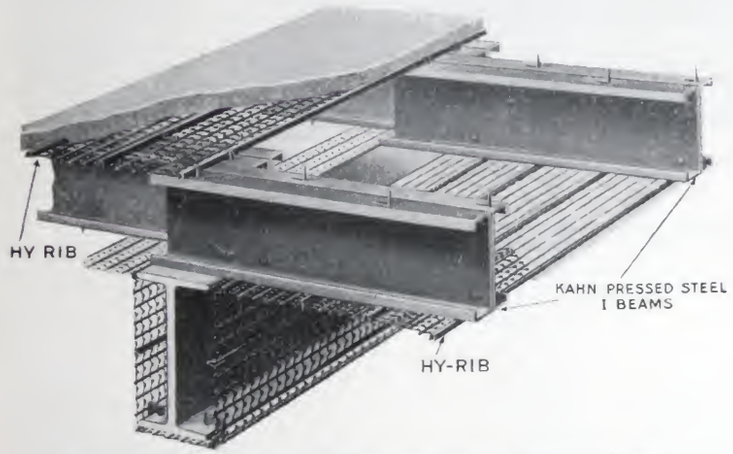
Imagine the advantage of living in a house that cannot be destroyed by fire or ruined by rats or vermin, and in which the plaster work on the interior does not crack or streak. Such a building is much more economical than the old style construction, even though it does cost slightly more in the first place. It is also erected much more easily and quickly.

Kahn Pressed Steel Joists used with Structural Steel and Masonry Walls
E. J. Woodison Factory, Detroit, Mich.
George W. Graves, Architect — Martin Burkheiser, Contractor

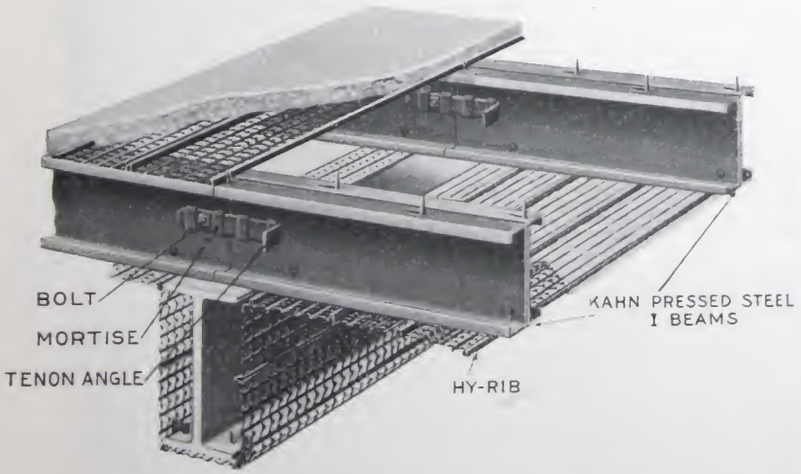
Kahn Pressed Steel Joists Supported by Structural Steel Beams



Supporting Pressed Steel I-Beams on Angles Riveted to Structural Steel



Pressed Steel I-Beams Resting on Top of Structural Steel Beams
Note fireproofing of Steel Beam with Hy-Rib Lath.

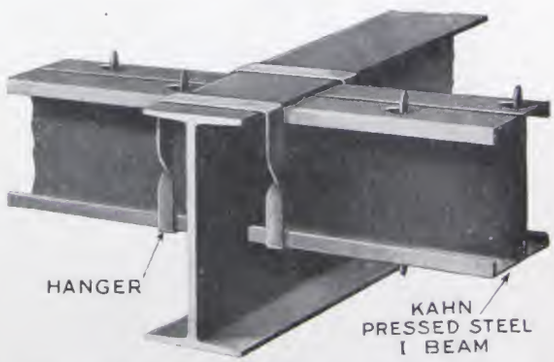


Kahn Pressed Steel Joists Extending Continuously over Structural Steel Beams, and Joined Together by Our Standard Connection.

A popular use of Kahn Pressed Steel Joists is in connection with Structural Steel supporting beams. The accompanying illustrations show various methods by which the Pressed Steel Joists can be supported from the structural steel beams. All of these methods will give satisfactory results and are adopted according to the conditions of the particular construction. In some instances, the entire construction of the building is of structural steel, including skeleton frame work of the exterior walls, while in others the interior is of structural steel framing used in connection with bearing outside walls. In all cases the Kahn Pressed Steel Joists are used for the floors.

The photograph of the new building at Crowley, Milner & Co. on the following page, shows how Kahn Pressed Steel Joists can be used in connection with structural steel work. Kahn Pressed Steel Construction was selected for the reason of its extremely light weight and fireproofness.

An angle seat as pictured in the cut at the top of this page was used to support the Kahn Pressed Steel Joists. The span is 20 feet between beams. A Hy-Rib concrete floor is laid on top and Hy-Rib ceiling to be applied latter completes a typical fire-proof and age-proof floor and ceiling.



Pressed Steel I-Beams Supported from Structural Steel by Steel Hangers
To be Used in Reconstruction Where Structural Steel has been Previously Erected

Kahn Pressed Steel Joists Supported by Structural Steel Beams. Crowley, Milner & Co., Detroit, Mich.
Albert Kahn, Architect — Irwin & Leighton, Contractors

WESTERN UNION TELEGRAM

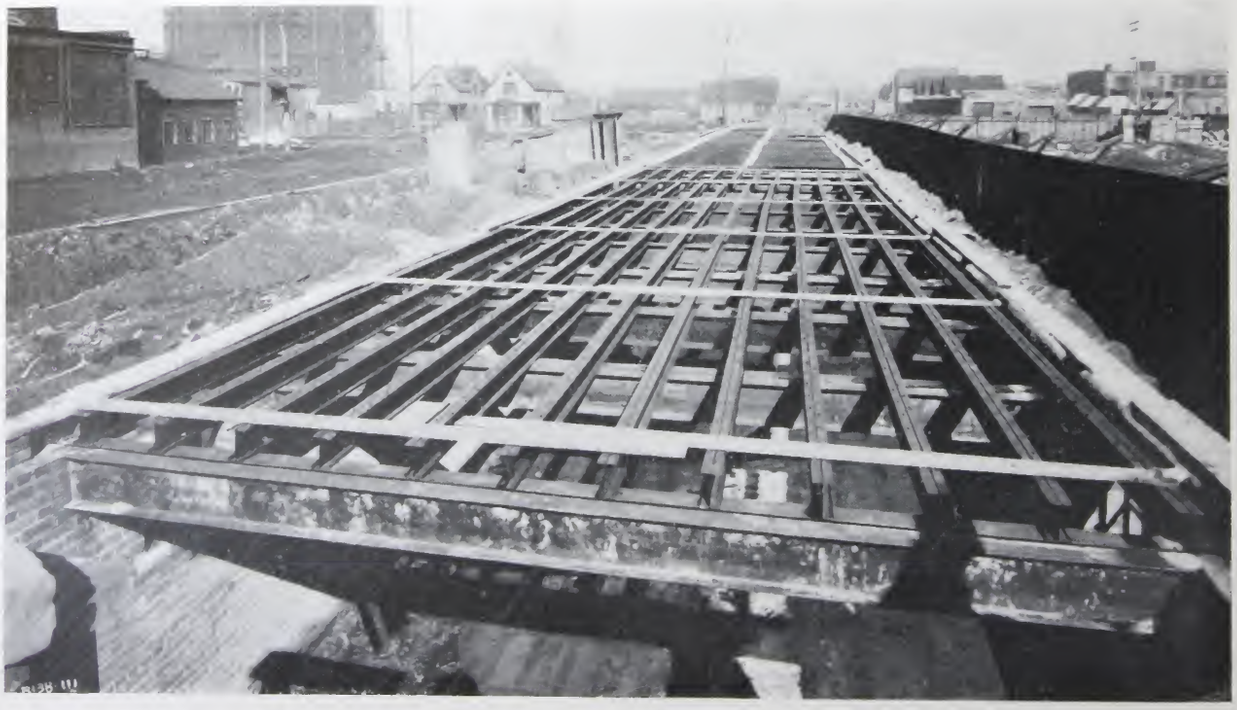
Mr. C. I. Auten
Baltimore, M.D.

Detroit, Mich., March 20th, 1916

Am using pressed steel construction in a Masonic Temple, a warehouse, and a two hundred thousand dollar residence; also will use same in a four story warehouse building. Construction is fast, simple and economical with no objectionable features,

Geo. W. Graves, Architect.

Prepaid.
A



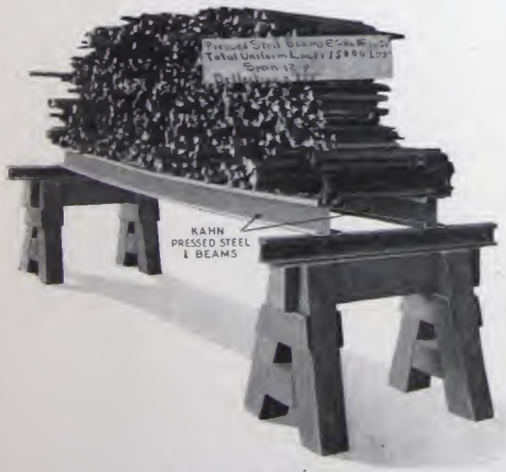
Kahn Pressed Steel Joists used with Structural Steel and Masonry Walls E. J. Woodison Factory, Detroit, Mich.
George W. Graves, Architect — Martin Burkheiser, Contractor

Safe Loads in Pounds, Uniformly Distributed, for Kahn Pressed Steel Beams

Span	B33	B33	B43	B43	B54	B54	B64	B64	B74	B74	B85	B85	B95	B95	B106	B126
	16	14	16	14	16	14	16	14	16	14	16	14	16	14	14	14
4	1828	2230	2690	3306	4395	5425	5625	6940	7540	8590	7920	11820	....	11980	....	.....
5	1463	1786	2155	2644	3517	4340	4495	5550	6030	6880	7650	9450	....	11110	....	.....
6	1219	1491	1798	2207	2933	3620	3750	4620	5030	5730	6370	7890	6960	9260	.....	.....
7	1030	1260	1540	1890	2513	3100	3214	3964	4307	4910	5460	6760	6400	7940	10180	.....
8	790	965	1348	1654	2200	2714	2810	3470	3770	4300	4780	5910	5600	6945	8990	.....
9	623	760	1198	1470	1952	2410	2497	3080	3350	3820	4216	5250	4975	6170	7980	.....
10	505	615	960	1220	1760	2170	2250	2775	3016	3440	3820	4730	4480	5555	7190	8900
11	417	510	820	1010	1600	1973	2045	2520	2740	3125	3480	4300	4075	5050	6540	8420
12	350	428	685	845	1405	1730	1875	2314	2515	2865	3185	3940	3740	4630	5990	7720
13	.....	365	585	720	1200	1480	1730	2135	2320	2645	2940	3640	3446	4275	5530	7125
14	.....	.....	505	620	1030	1270	1585	1950	2155	2455	2730	3380	3200	3970	5140	6610
15	.....	.....	.....	540	900	1110	1380	1700	1985	2290	2550	3155	2985	3704	4790	6170
16	.....	.....	.....	.....	790	975	1210	1495	1745	2150	2390	2960	2800	3475	4490	5790
17	.....	.....	.....	.....	.....	860	1070	1325	1545	1915	2250	2785	2635	3270	4230	5450
18	.....	.....	.....	.....	.....	.....	960	1180	1380	1705	2125	2630	2490	3090	3995	5140
19	.....	.....	.....	.....	.....	.....	860	1060	1240	1530	1950	2410	2360	2930	3780	4875
20	.....	.....	.....	.....	.....	.....	.....	960	1115	1380	1760	2175	2240	2780	3400	4630
21	.....	.....	.....	.....	.....	.....	.....	.....	1010	1255	1595	1970	2100	2610	3425	4410
22	.....	.....	.....	.....	.....	.....	.....	.....	.....	1145	1450	1800	1920	2380	3270	4210
23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1330	1645	1750	2175	3120	4030
24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1510	1610	1995	2870	3855
25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1485	1840	2640	3705
26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1370	1700	2445	3560
27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1275	1580	2270	3430
28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1470	2110	3260
29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1965	3040
30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1840	2840

Values above and to the right of upper heavy line determined by web crippling using AB Co. formula (See Carnegie Page 181) assuming support 2" wide. Values below and to left of lower heavy line determined by deflection = 1/360 of span. Other values based on moment = $\frac{1}{8}$ WL with extreme fibre stress = 14500 lbs. per sq. inch where W = total superimposed load uniformly distributed. Sections assumed with prongs and without No. 1 connections.

Remarkable Test of Kahn Pressed Steel I-Beams



LOAD 15,000 LBS.

Two Kahn Pressed Steel I Beams, 6" deep, 16 ga., 4.9 lbs. per ft., spaced 24" centers.

Span of Beams: 12 ft. Loading material: bar steel, uniformly distributed.

Calculated safe load (based on stress of 14,500 lbs. per sq. in.): 4230 lbs., with allowable deflection $\frac{3}{8}$"

Results of test show exceptional strength and stiffness of Beams.

Loading	4520 lbs.	13560 lbs.
Deflection	$\frac{1}{4}$"	$\frac{15}{16}$"
Loading	15000 lbs.	16000 lbs.
Deflection	$1\frac{5}{8}$"	Failure

Factor of safety 3.78 times calculated safe load, a much greater factor of safety than shown in tests of rolled steel I-Beams. Deflection for 4,520 lbs. is only $\frac{1}{4}$".

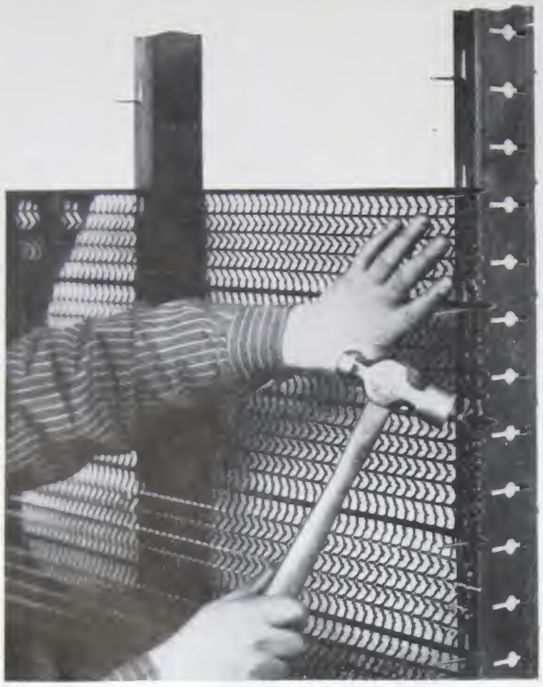
Weight of Kahn Pressed Steel Floors

Wood Floor with Plastered Ceiling

	Weight per square foot
Wood flooring	3 lbs.
$1\frac{1}{2}$" Concrete slab	18 lbs.
Kahn Pressed Steel joists (average weight)	3 lbs.
Plaster ceiling	8 lbs.
Total	32 lbs

For cement finished floor deduct for weight of wood finish, making proper allowance if the floor varies from $1\frac{1}{2}$ inches in thickness. For floors without ceiling deduct weight of ceiling from above figures.

Bearing Partitions of Kahn Pressed Steel Construction



THE ONLY TOOL REQUIRED IS A HAMMER

The simple and easy way of attaching the Hy-Rib to Kahn Pressed Steel Studs.

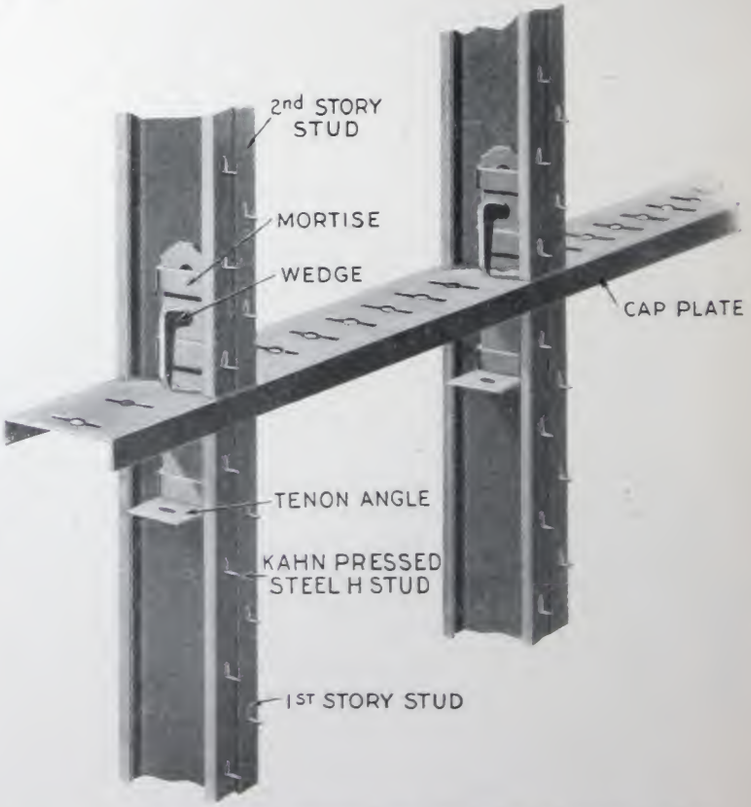
Kahn Pressed Steel Studs, particularly H Studs, provide economical bearing partitions for buildings. Such partitions can be made of ample strength to support floor loads as is shown by their use in supporting five stories in the Niagara Hotel, Toledo, Ohio (pages 18 and 19). The table on page 16 gives the carrying capacity of various sizes of studs.

Note the simplicity of this bearing partition construction as shown by accompanying details. The Pressed Steel Studs extend continuously throughout the height of the building, being rigidly united through the sill plates by means of our standard connection. The Pressed Steel Joists are supported on the sill plates and connected to them as shown in details.

Pressed Steel Construction is extensively used for bearing partitions and joists in connection with masonry for outside walls. Such a construction is erected more rapidly and easily than wood joists and studs with outside walls of masonry. Its advantages of fireproofness, verminproofness, and crackless plaster work make it by all odds the most satisfactory and economical construction that can be used.

CONNECTION OF PRESSED STEEL SILL AND JAMB.
(Connection between lintel and jamb is similar).

The tenon angle is passed through the mortise in the sill plate and through the slot in the jamb stud. The wedge driven through the hole in the tenon angle holds the joint tightly.



CONTINUOUS CONNECTION OF PRESSED STEEL STUDS THROUGH CAP PLATE.

The tenon angle passes through the mortise in the lower stud, then through the cap plate and finally through the mortise in the upper stud. The wedge driven in place holds the joint rigidly, making one continuous stud throughout the height of the building.

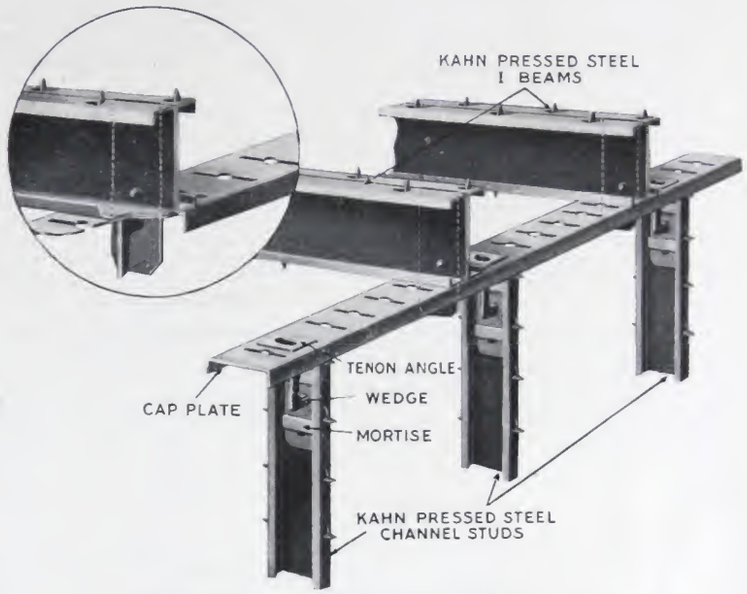
Standard Connection of Kahn Pressed Steel Construction

UNIVERSAL IN APPLICATION

The parts that go to make up the standard connections between Pressed Steel members of all types are shown below, and the assembled joints appear in the other illustrations. The principle of the connection is similar in all cases, and includes tenon angle, slotted plate, mortise, and wedge. The joint is quickly assembled and the wedge, driven in place by a blow of a hammer, not only tightens the joint but owing to its rectangular shape, stiffens and braces the corner.

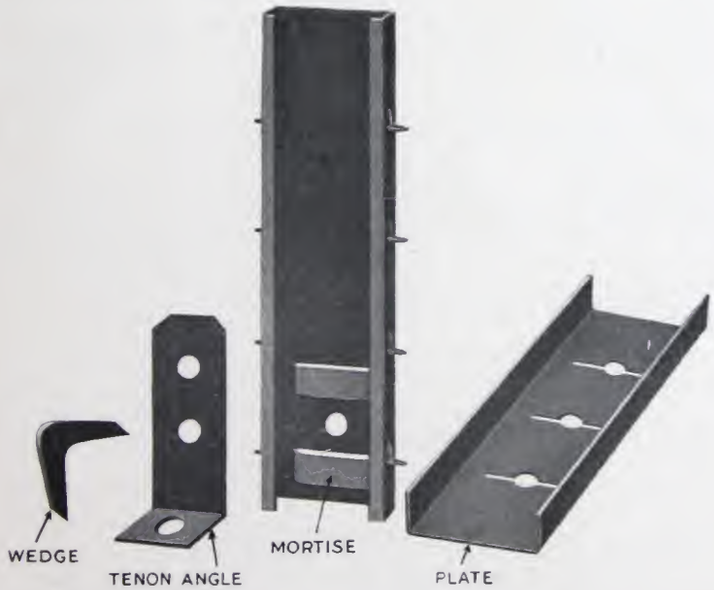
This standard connection is one of the big features of Kahn Pressed Steel Construction, eliminating, as it does, all punching, riveting and bolting at the building site. **The only tool required is a hammer.**

It will be noted that all connections provide a circular hole so that if desired these connections may be bolted. This is not necessary nor desirable, as the wedge connection is preferable.



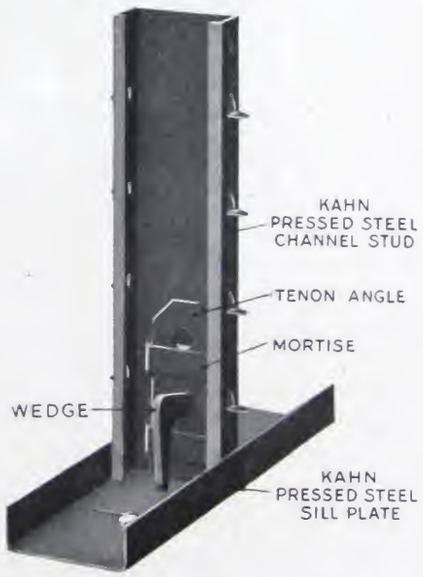
CONNECTION OF PRESSED STEEL BEAMS TO SILL PLATE.

The Pressed Steel I-Beams are furnished with special plates riveted between them at the end. This plate passes through slit in cap plate and the wedge is driven in place holding the joint rigidly.



PARTS OF STANDARD CONNECTION.

The tenon angle is passed through the sill plate from below and engages the mortise in the stud. The wedge is then driven in place by the blow of a hammer and holds the joint rigidly.



CONNECTION OF PRESSED STEEL STUD AND SILL PLATE

Safe Loads on Partitions

Strut Loads—Use only when Struts have Hy-Rib and Plaster on Both Sides

Index	Ga.	HEIGHT OF PARTITION											
		7′	8′	9′	10′	11′	12′	13′	14′	15′	16′	17′	18′
B33	16	7690	7155	6625	6090	5550	5020	4480	.....	.....	.....	.....	.....
B33	14	9450	8790	8115	7450	6790	6220	5460	.....	.....	.....	.....	.....
B43	16	.....	9450	9300	8795	8300	7800	7295	6795	6300	5795	5300	.....
B43	14	.....	11670	11450	10830	10200	9580	8960	8310	7725	7095	6480	.....
B54	16	.....	.....	.....	12700	12570	12150	11490	10920	10400	9840	9295	8745
B54	14	.....	.....	.....	15740	15530	14850	14200	13500	12840	12160	11470	10780
B64	16	.....	.....	.....	.....	.....	14325	14100	13590	13040	12515	12000	11470
B64	14	.....	.....	.....	.....	.....	17770	17440	16800	16130	15490	14820	14160
C31½	16	3580	3330	3080	2820	2570	2315	2070	.....	.....	.....	.....	.....
C31½	14	4400	4085	3775	3460	3145	2840	2525	.....	.....	.....	.....	.....
C41½	16	.....	4470	4380	4140	3900	3655	3420	3180	2940	2695	2455	.....
C41½	14	.....	5525	5390	5080	4790	4495	4200	3900	3610	3305	3010	.....
C52	16	.....	.....	.....	6095	6025	5750	5500	5230	4975	4705	4450	4185
C52	14	.....	.....	.....	7555	7430	7100	6775	6450	6130	5800	5470	5150
C62	16	.....	.....	.....	.....	.....	6905	6760	6510	6250	5995	5750	5490
C62	14	.....	.....	.....	.....	.....	8570	8390	8060	7750	7425	7110	6780

Cap Loads (P) at lbs.
Concentrated at Center of Span

Index	Ga.	STUD SPACING				
		24″	22″	20″	18″	16″
P31½	14	302	329	362	402	453
P31½	11	473	516	568	631	710
P32	14	518	565	622	691	777
P32	11	815	889	978	1087	1223
P32½	14	784	855	941	1045	1176
P32½	11	1244	1357	1493	1658	1866
P41½	14	327	357	393	436	491
P41½	11	513	559	615	683	769
P42	14	564	615	677	752	846
P42	11	888	968	1065	1183	1331
P42½	14	855	933	1026	1140	1283
P42½	11	1354	1477	1625	1805	2031
P51½	14	345	376	413	459	517
P51½	11	534	582	641	712	801
P52	14	594	647	713	792	891
P52	11	935	1019	1121	1246	1402
P52½	14	905	987	1086	1207	1358
P52½	11	1431	1561	1718	1908	2147
P61½	14	352	384	423	470	528
P61½	11	551	601	662	735	827
P62	14	615	671	738	820	923
P62	11	964	1051	1157	1285	1446
P62½	14	941	1027	1130	1255	1412
P62½	11	1479	1613	1775	1972	2218

Strut Loads—Use when one or both sides are unplastered

Index	Ga.	HEIGHT OF PARTITION			
		7′	8′	9′	10′
B33	16	5900	5060	4275	.....
B33	14	7200	6160	5200	.....
B43	16	6470	5380	.....	.....
B43	14	7820	6560	.....	.....
B54	16	10650	9570	8400	7325
B54	14	13100	11750	10300	8850
B64	16	11450	10140	8810	7385
B64	14	14070	12450	10800	9020

A. B. Co. Col. formula ($f = 19000\frac{100 \times 1}{r}$ with maximum = 13000 lbs. per sq. in.) used for strut loads, adopting r about AA axis for studs plastered both sides and r about BB axis for unplastered studs.

Cap loads computed for 14500 lbs. per sq. in. extreme fibre stress. Moment = $\frac{PL}{6}$ Sections assumed with No. 1 connections and without prongs. P = concentrated load in lbs. L = stud spacing in inches.

AUXILIARY MEMBERS						
Sect.	C21	P21	P31	P41	P51	P61
Ga.	16	16	16	16	16	16
Wt.	0.78	0.81	1.02	1.22	1.43	1.61

Auxiliary members (C21) used as studs for non-bearing partitions.

Auxiliary members (P) used for sill plates only.

Specifications for Kahn Pressed Steel Construction

SPECIFICATIONS FOR KAHN PRESSED STEEL FLOORS

Provide Kahn Pressed Steel Beams of the proper section to support the required live load plus the dead load of the slab, calculations to be based on the following formula:

$$M.\ B. = fd\left(A_s + \frac{dt}{6}\right)$$

When M. B. = Maximum Bending Moment in inch pounds.
f = 14,500 pounds per square inch.
d = Height of the beam in inches.
A_s = Net flange area or the gross flange area minus the area of the holes punched out for prongs.
t = The thickness of the web in inches.

The sections of the pressed steel beams must be symmetrical about both a vertical and a horizontal axis. The pressed steel beams shall be placed 23½" on centers. For centering, reinforcing and bridging No. 24 gauge ⅜" Hy-Rib Lath shall be laid on top of the beams with the ribs of the Hy-Rib extending across them.

Where nailing strips are not required this Hy-Rib shall be attached to the pressed steel beams by means of prongs punched in the upper flanges of the beams. The prongs to be punched 4" on centers. Where nailing strips are required they shall consist of 1½" x 1½" strips. These strips are to be placed on top of the Hy-Rib and directly above each pressed steel beam. The nailing strips shall be securely nailed to the pressed steel beams by wire nails to be driven 1" inside of each edge of each Hy-Rib sheet. The concrete slabs shall be 1½" in thickness and shall be made from concrete of the following mix:

1 Part Cement
3 Parts Sand
5 parts Stone

The concrete shall be struck off level with the top of the nailing strips.

The Hy-Rib on top of the beams shall be laid with the lath side next to the beam. If the ceiling is required beneath the beams, it shall be constructed by attaching No. 28 gauge ⅜" Hy-Rib Lath to the under side of the beams by means of the prongs punched in their flanges. The rib side of the Hy-Rib shall be placed against the bottom of the beam.

SPECIFICATIONS FOR KAHN PRESSED STEEL HOLLOW PARTITIONS

Kahn Pressed Steel Studs of the required size shall be provided and spaced on 23½" centers. These studs shall be secured at the bottom to pressed steel channel plates by means of the standard mortise and tenon joints. They shall be fastened at the top to pressed steel cap plates by the same means. Before the Hy-Rib is applied nail rough bucks to jambs, sills and lintels. (See detail drawings.) No. 28 gauge, ⅜" Hy-Rib Lath shall be attached to both sides of the studs by means of the prongs punched in their flanges. In all cases the ribbed side of the Hy-Rib shall be next to the flanges of the stud.

Interlap all adjoining sheets of Hy-Rib at sides and ends. Sheets shall be securely fastened together along the sides of the sheet midway between the studs by wiring or by clinching of the lapped ribs with a special punch. Where end splices occur between studs, splices in adjacent rows must be at least 2 ft. apart. Allow a lap of 2" where splices occur over studs, otherwise 8".

SPECIFICATIONS FOR SOLID PARTITIONS (Non-Bearing)

Solid interior partitions shall be 2" in thickness. ¾" Pressed Steel Channels shall be used as studs and spaced 23½" on centers. No. 28 Gauge ⅜" Hy-Rib Lath shall be attached to the ¾" Pressed Steel Channel Studs by wiring. The lath side of the Hy-Rib shall be placed against the studs. The rib where the sheets lap shall be wired to every stud and each alternate rib between laps.

SPECIFICATIONS FOR ROOFS

Roofs shall be constructed in a manner similar to that specified for the construction of Pressed Steel Floors, with the exception that nailing strips shall be placed at a spacing to accommodate whatever kind of waterproofing material it is proposed to use.

SPECIFICATIONS FOR CEILINGS

For ceiling attached to the under side of Pressed Steel Beams, see the specifications for Pressed Steel Floor construction.

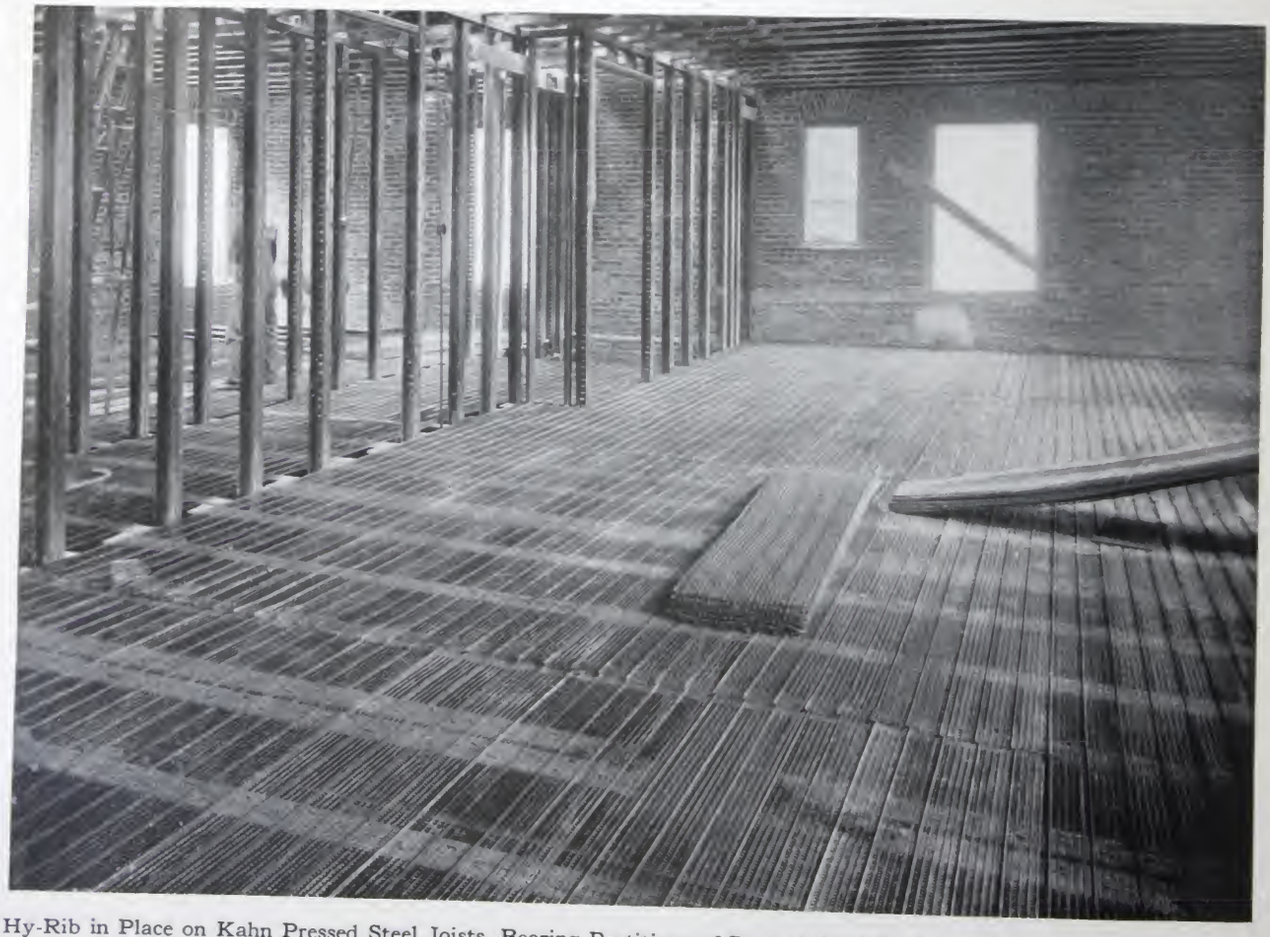
SPECIFICATIONS FOR SUSPENDED CEILINGS

Where a suspended ceiling is required it shall be constructed by hanging Pressed Steel Channels from the construction above by No. 7 galvanized wire hangers. Hy-Rib shall be wired to the channels and the same plastered.

Where a ceiling is required to be erected at the bottom of structural steel trusses, Pressed Steel Beams of the proper section, placed on 23½" centers, shall be attached to the under side of the roof trusses. No. 28 Gauge ⅜" Hy-Rib Lath shall then be attached to the under side of the Pressed Steel Beams by means of the prongs punched in their flanges.

Special Trussing of Kahn Pressed Steel Construction Over Doorways
Note Prongs on Studs for Attaching Hy-Rib

Kahn Pressed Steel Joists Supported on Angles Riveted to Sides of Structural Steel Beams. Note Method of Suspending Pipes from Joists



Hy-Rib in Place on Kahn Pressed Steel Joists, Bearing Partitions of Pressed Steel Studs Ready for Attaching Hy-Rib. Note Slotted Holes in Jambs and Lintel Around Doorway for Attaching Door Bucks and Wood Trim
Niagara Hotel, Toledo, Ohio — Thomas F. Huber, Architect — Henry J. Spieker Co., Contractor

WESTERN UNION TELEGRAM

9 2 w 32 collect blue 1 extra.

Toledo, Ohio, Jan. 24, 1916

Trussed Concrete Steel Co.,
Youngstown, O.

After several thorough tests we find that the pressed steel floors and partitions in Hotel Niagara are sound proof, better in this respect than any other construction we have used.

THOS. HUBER,
Architect. 1225pm

THE HENRY J. SPIEKER COMPANY
GENERAL CONTRACTORS
409 Michigan Street
TOLEDO, OHIO

Toledo, Ohio, Jan. 5, 1916

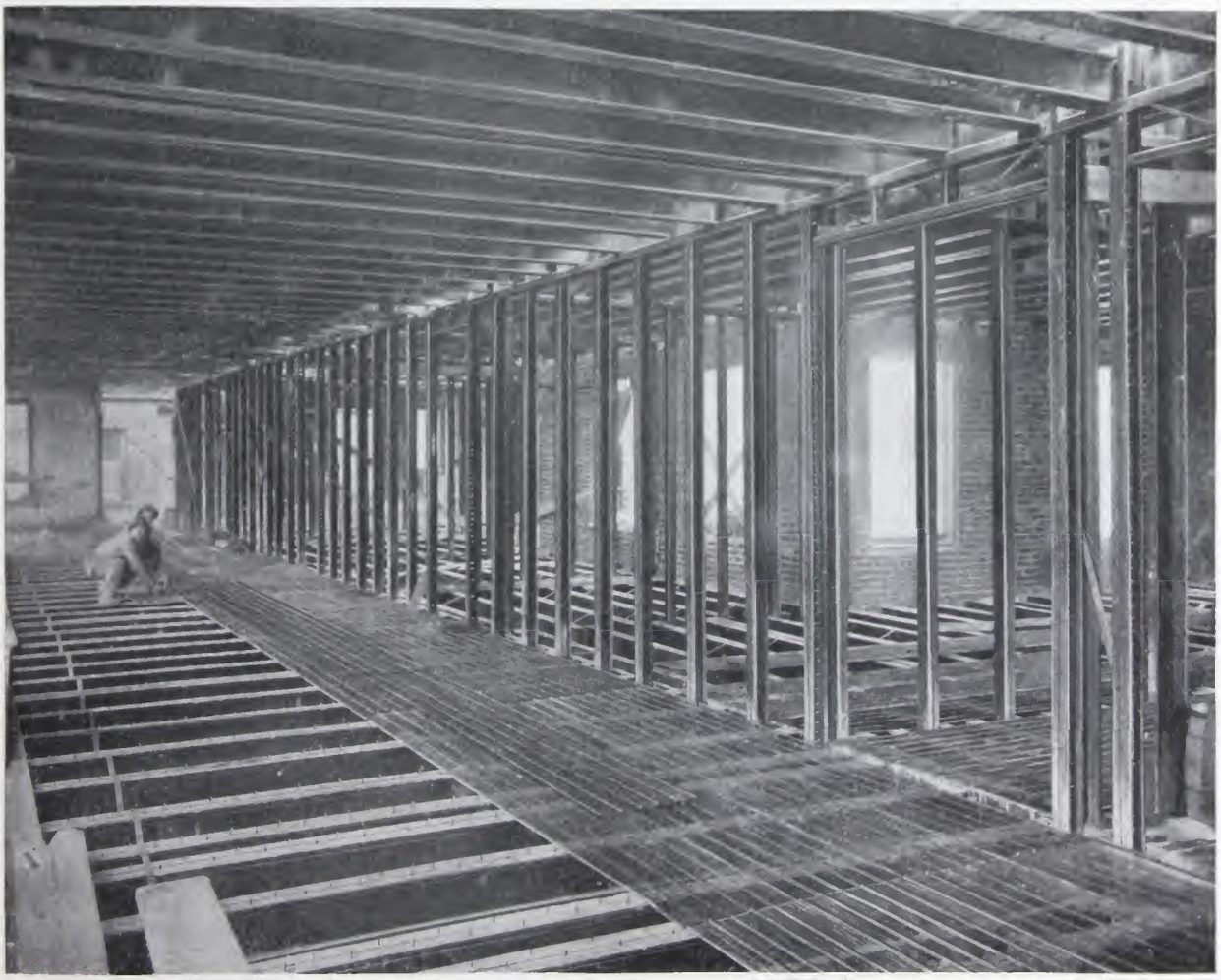
Trussed Concrete Steel Co.,
Youngstown, Ohio.

Attention—Mr. C. I. Auten

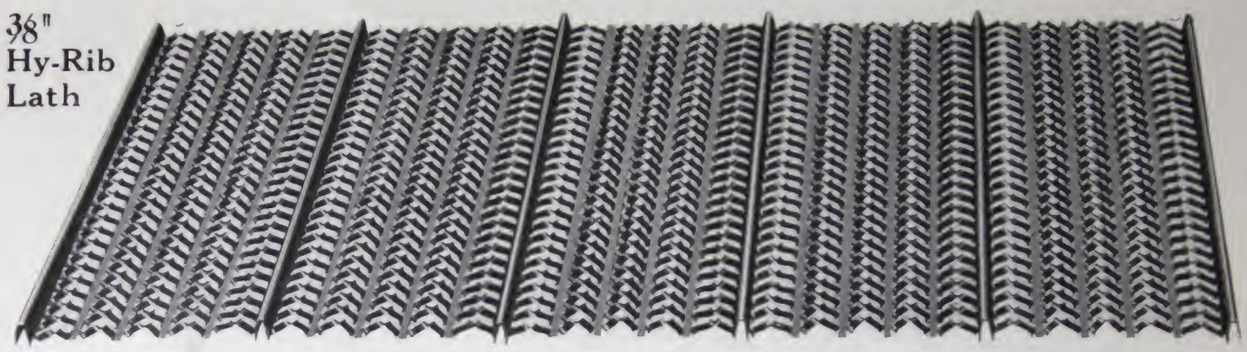
Dear Sir:—

Your letter of the 3rd at hand and beg to advise that the Pressed Steel materials as furnished by your Company for the construction of the Niagara Hotel were entirely satisfactory not only to us but also to both Architect and Owner.

Very truly yours,
THE HENRY J. SPIEKER CO.,
AGS/BR By A. G. Spieker.



Kahn Pressed Steel Joists and Studs for Floors and Bearing Partitions Showing Part of Hy-Rib in Place on Floor. Niagara Hotel, Toledo, Ohio. Thomas F. Huber, Architect



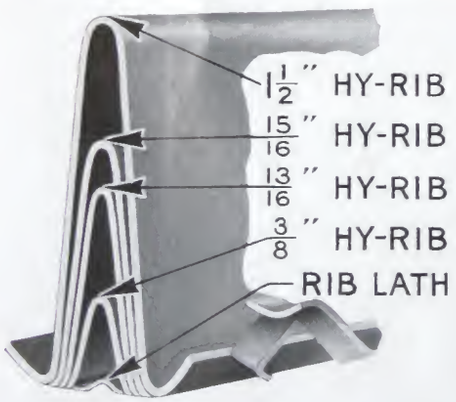
Hy-Rib with Kahn Pressed Steel Construction

Hy-Rib is a steel sheathing, stiffened by rigid, deep ribs, formed from the same sheet of steel. The ribs give great stiffness to the mesh, eliminating wood forms in floors and roofs, and stiffening members in partitions, walls and ceilings. Hy-Rib presents a true, rigid surface for plastering, saving in time, labor and materials.

3/8" Hy-Rib Lath is ordinarily used with Kahn Pressed Steel Construction; the 24 gauge for floors and the 28 gauge for ceilings, walls and partitions. The Hy-Rib Lath is readily attached to the Pressed Steel Shapes by simply bending down the prongs provided in the steel members.

3/8" Hy-Rib	*Clear distance between studs for walls and partitions	*Clear distance between supports for ceilings
24 gauge	36"	33"
26 gauge	32"	30"
28 gauge	24"	22"

*Add width of flange of section to obtain center to center spacing.



Hy-Rib is also furnished in greater depths, which provide greater stiffness and permit wider spacing of supports. In this way **Hy-Rib** exactly meets all requirements of strength and economy.

Type of Hy-Rib	Formerly Called	Height of Ribs	Spacing of Ribs	Width of Sheets	Gauge Nos. U. S. Standard
1 1/2" **Hy-Rib**	Deep-Rib	1 1/2"	7"	12"	22, 24, 26
15/16" **Hy-Rib**	7-Rib	15/16"	4"	24"	22,24,26,28
13/16" **Hy-Rib**	3-Rib	13/16"	8"	16"	24, 26, 28
3/8" **Hy-Rib**	6-Rib	3/8"	4"	20"	24, 26, 28

Standard lengths, 6, 8, 10 and 12 feet.

Other lengths cut without charge except for waste

Important Advantages of Kahn Pressed Steel Construction

1. Our standard connection eliminates punching, riveting and bolting. It saves time and labor in erection and is truly universal in its application. **The only tool required is a hammer.**

2. All beam sections are symmetrical both horizontally and vertically. There is no danger of the contractor placing beams with the wrong side up such as might occur with unsymmetrical sections.

3. Wide choice in sections and heights of members in addition to various gauges of metal.

4. Standard rivets used to unite the channels forming the I-Beams and riveting done under powerful press.

5. Use of 3/8" Hy Rib for floor centering and ceiling does away with need for bridging. The ribs act as a strut and thoroughly brace beams together.

6. The stiffness of Hy-Rib prevents sagging, thereby saving material in concreting and labor and material in plastering.

7. The extra turned flanges on both faces of beams and studs add greatly to their stiffness and strength. The calculation of all beams is based on net sections deducting the holes punched out for the prongs.

Kahn Pressed Steel Sections

Manufactured from highest grade of steel under powerful presses. Large variety of shapes, sizes, guages and sections. Symmetrical beam sections with turned flanges prevent placing beams wrong side up. Prongs on flanges for attaching Hy-Rib. Slots and holes in jamb, sills and lintels for nailing rough bucks and wood trim. All members cut to exact length, punched and fabricated for all connections. Painted with special rust-resisting paint before shipment.

I-Beams

Channels

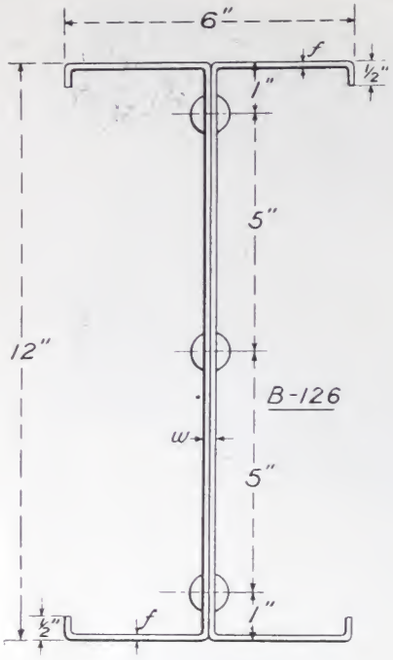
Cap and Sill Plates

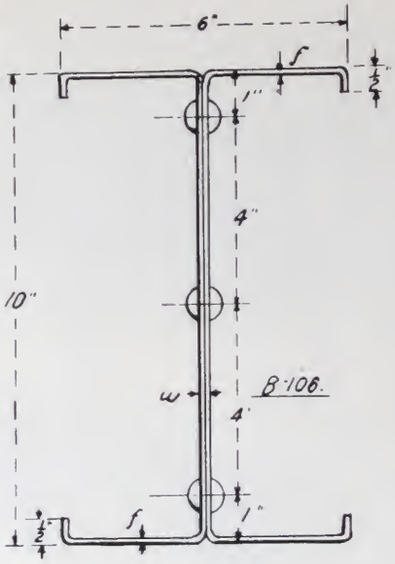
H-Stud

Channel Stud

2-Inch Channels

Small Channels Without Prongs





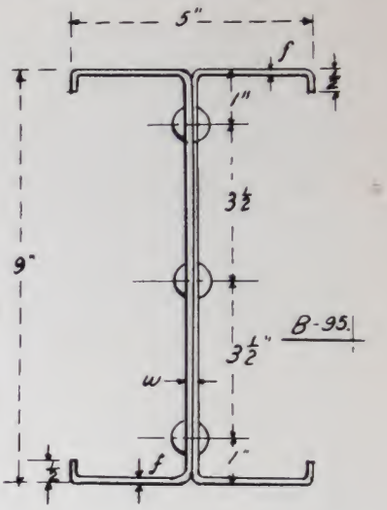
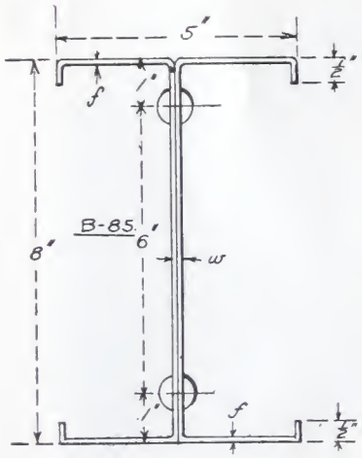
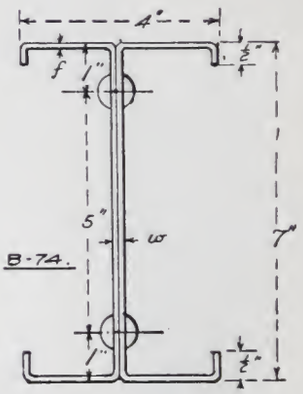
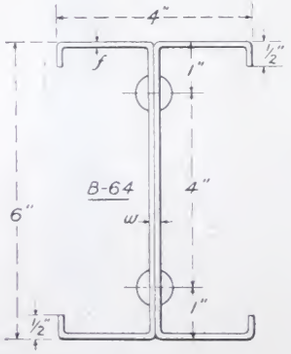


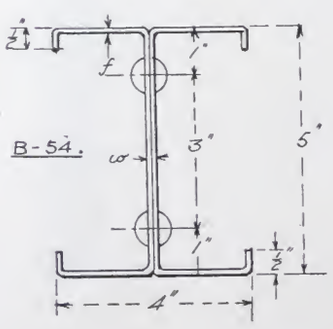
Table of Kahn Pressed Steel I-Beams

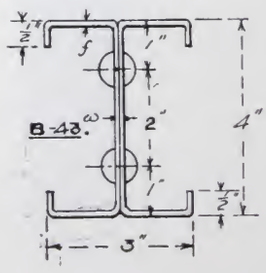
Section inches		Depth of Beam in inches	Width of Flange inches	Weight per foot pounds	Thickness of Flange inch (f)	
					Decimal	Fraction
B126	14	12	6	9.6	.078	5/64
B106	14	10	6	8.6	.078	5/64
B95	16	9	5	6.0	.062	1/16
	14			7.6	.078	5/64
B85	16	8	5	5.6	.062	1/16
	14			7.0	.078	5/64
B74	16	7	4	4.8	.062	1/16
	14			6.0	.078	5/64
B64	16	6	4	4.4	.062	1/16
	14			5.5	.078	5/64
B54	16	5	4	4.0	.062	1/16
	14			5.0	.078	5/64
B43	16	4	3	3.1	.062	1/16
	14			3.9	.078	5/64
B33	16	3	3	2.7	.062	1/16
	14			3.4	.078	5/64

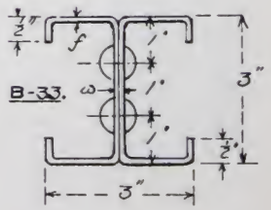


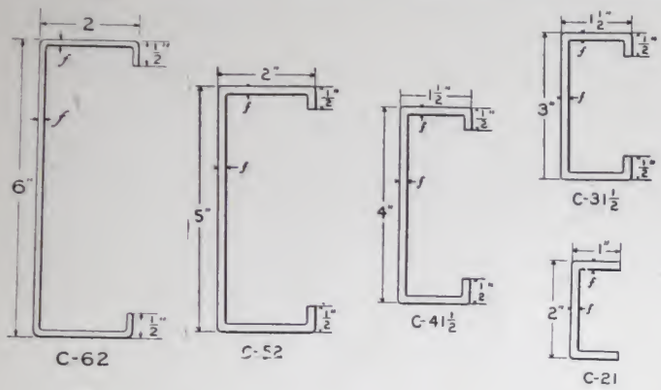


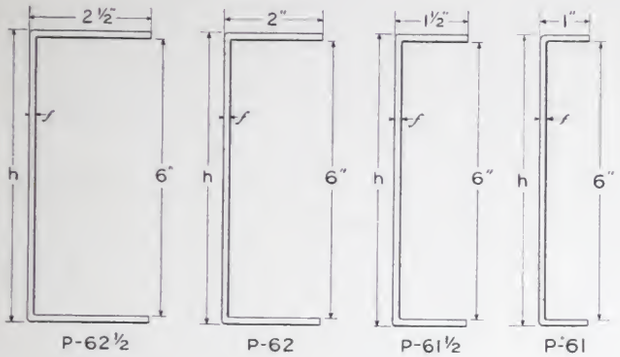


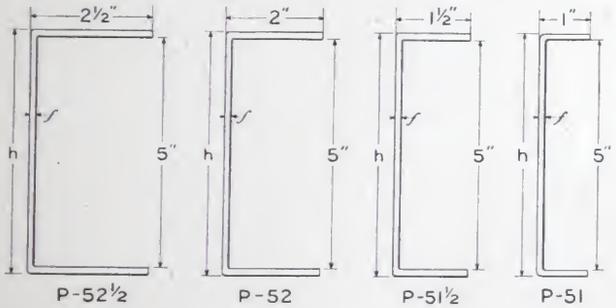


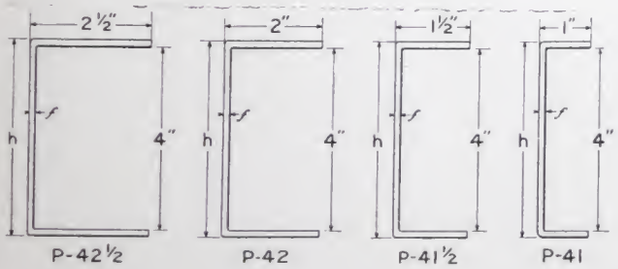


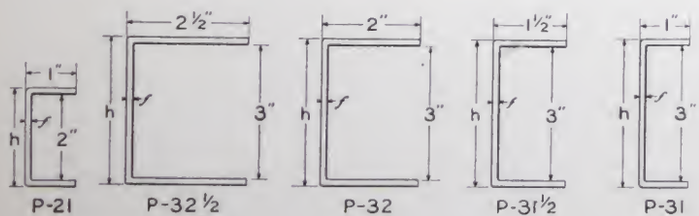












Kahn Pressed Steel Channel Studs

Section Index		Height inches	Width of Flange inches	Wt. per Lin. Foot pounds	Thickness of Flange and Web, inches	
					Decimal	Fraction
C62	16	6	2	2.19	.062	1/16
	14			2.74	.078	5/64
C52	16	5	2	1.98	.062	1/16
	14			2.48	.078	5/64
C41½	16	4	1½	1.56	.062	1/16
	14			1.95	.078	5/64
C31½	16	3	1½	1.35	.062	1/16
	14			1.69	.078	5/64
C21	16	2	1	.78	.062	1/16

Small Kahn Pressed Steel Channels without Prongs

Guage No.	Height inches	Wt. per Lin. Foot pounds	Thickness of Flange and Web, inches	
			Decimal	Fraction
16	2	.553	.062	1/16
16	1½	.442	.062	1/16
16	1	.332	.062	1/16
16	¾	.276	.062	1/16

Kahn Pressed Steel Cap and Sill Channels

Section Index		Height inches	Width of Flange Inches	Wt. per Lin. Foot pounds	Thickness of Flange and Web, inches	
					Decimal	Fraction
P62½	14	6 5/32	2½	2.83	.078	5/64
	11	6¼		4.58	.125	⅛
P62	14	6 5/32	2	2.58	.078	5/64
	11	6¼		4.17	.125	⅛
P61½	14	6 5/32	1½	2.32	.078	5/64
	11	6¼		3.75	.125	⅛
P61	16	6⅛	1	1.64	.062	1/16
P52½	14	5 5/32	2½	2.58	.078	5/64
	11	5¼		4.17	.125	⅛
P52	14	5 5/32	2	2.32	.078	5/64
	11	5¼		3.75	.125	⅛
P51½	14	5 5/32	1½	2.05	.078	5/64
	11	5¼		3.34	.125	⅛
P51	16	5⅛	1	1.43	.062	1/16
P42½	14	4 5/32	2½	2.32	.078	5/64
	11	4¼		3.75	.125	⅛
P42	14	4 5/32	2	2.05	.078	5/64
	11	4¼		3.34	.125	⅛
P41½	14	4 5/32	1½	1.79	.078	5/64
	11	4¼		2.92	.125	⅛
P41	16	4⅛	1	1.22	.062	1/16
P32½	14	3 5/32	2½	2.05	.078	5/64
	11	3¼		3.34	.125	⅛
P32	14	3 5/32	2	1.79	.078	5/64
	11	3¼		2.92	.125	⅛
P31½	14	3 5/32	1½	1.53	.078	5/64
	11	3¼		2.50	.125	⅛
P31	16	3⅛	1	1.02	.062	1/16
P21	16	2⅛	1	.81	.062	1/16

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